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ABSTRACT

This report confirms the detrimental effects of low family income on children by examining the well-being of children across all incomes and race-ethnicity groups in a nationally representative sample of children attending kindergarten and participating in the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99. The sample included 51 percent boys and was 59 percent European-American, 17 percent Latino, 14 percent African-American, 5 percent Asian-American, and 5 percent other race/ethnic group. Seventy-five percent were from two-parent families. Forty-five percent of kindergartners lived in low-income families. Data were comprised of three indicators of academic development, four indicators of social and emotional development, and one indicator of physical development. Findings revealed that children in families whose incomes fell below 200 percent of the federal poverty level (FPL) were well below average in reading, math, and general knowledge test scores, compared to well-above-average scores of children living in families with incomes over 300 percent of FPL. Some children in low-income families scored considerably above the mean. As families' incomes increased, so did levels of both children's social competence and self-regulation. As families' incomes increased, levels of externalizing and internalizing problem behaviors decreased at regular intervals. Children in low-income families were more likely than other children to be overweight, although 10 percent of all kindergartners, regardless of family income, were seriously overweight. The report concludes with a discussion of public policy implications, noting that the findings provide clear support for a broad

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perspective on factors that promote school readiness and early school success. (Contains 17 endnotes.) (KB)

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Living at the Edge

RESEARCH BRIEF No. 4

Low Income and the Development of America's Kindergartners

Elizabeth Gershoff

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LIVING AT THE EDGE RESEARCH BRIEF 4
Low Income and the Development of America's Kindergartners

SERIES INTRODUCTION

The federal poverty level, the standard by which the United States determines economic need, was developed 40 years ago. Data collected in the 1950s indicated that, on average, families spent one-third of their income on food. The original poverty level used the costs of the U.S. Department of Agriculture's "economy food plan" and multiplied those costs by three.* Today, food comprises far less than one-third of a family's expenses, while housing, transportation, and child care costs have grown disproportionately. Yet we still measure poverty by the original standard developed in the early 1960s.

The federal poverty level for a family of four is currently $18,400.* There are 12 million children who live in such families in this country. However, the numbers are far worse. Double the income that is considered "poverty" is needed for most families to provide their children with basic necessities like adequate food, stable housing, and health care. Families who live in this gray area between official poverty and minimum economic security have many of the material hardships and financial pressures that officially poor families face. As their income grows, they rapidly lose eligibility for public benefits, making it harder for them to reach economic self-sufficiency. As a nation, we must make a commitment to provide low-income families with the tools they need to create better lives for themselves.

There are 27 million children living in low-income families in the United States—nearly 40 percent of all children—a figure that is not officially acknowledged. This series examines who these families are, their challenges, and the policy solutions. Policies that do not address the complexity of the problem are not enough. True economic security includes: (1) stable, predictable income; (2) savings and assets that can help families survive crises and plan for the future; and (3) human and social capital (e.g., education, skills, and support systems) that help families improve their financial status.

The fourth report in the series, *Low Income and the Development of America's Kindergartners*, looks at indicators of development in children at the end of the kindergarten year. By the time they begin formal schooling, children in low-income families already lag significantly behind their more affluent peers academically, socially, and physically. The well-being of kindergarten children from across all incomes and race-ethnicity groups is examined.

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* For more information about the federal poverty level, see the web site of the U.S. Department of Health and Human Services: <aspe.hhs.gov/poverty/03poverty.htm>.

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The more income a family has, the better their children do academically, socially, and physically. This research shows a dramatic linear pattern between family income and children's positive development is especially clear when the effects of family income are examined for all children.

Living in low-income families—families with incomes below 200 percent of the federal poverty level[1]—the amount that research suggests is needed for most families to be economically self-sufficient[2]—exacts a measurable toll on children's overall healthy development. The intellectual, social-emotional, and physical development of children in low-income families have been shown to lag behind that of their more affluent peers. However, previous studies focused mainly on low-income, and often minority, children.[3]

This report confirms the detrimental effects of low family income on children by examining the well-being of children from across all incomes and race-ethnicity groups in a nationally representative sample of children attending kindergarten—The Early Childhood Longitudinal Study (Kindergarten Cohort)—in 1998 (see Box 1).

Box 1: The Early Childhood Longitudinal Study (Kindergarten Cohort)

Data Set

Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), is a longitudinal, nationally representative study of 21,255 American kindergartners that began in 1998 as an ongoing effort by the U.S. Department of Education, National Center for Education Statistics. The sample includes 51 percent boys and is 59 percent European-American, 17 percent Latino, 14 percent African-American, 5 percent Asian-American, and 5 percent of other race or ethnic group. Seventy-five percent of the children came from two-parent families. The ECLS-K follows the children from kindergarten through fifth grade.[a]

Income Groups

In this nationally representative sample, 45 percent of kindergartners live in low-income families: 25 percent live in families with incomes between 100 percent and 200 percent of the federal poverty level (FPL), and 20 percent live in families with incomes below the FPL. These rates are comparable to the national rates for families with children under age 6 as reported by the U.S. Census Bureau for 1998.[b] (See Figure 1 for examples of income equivalents as a percent of FPL.)

Family income in these analyses is specifically what is referred to as an "income-to-needs ratio." This ratio is adjusted annually for inflation and takes into account the number of adults and children in the family and compares family income with the income level determined by the U.S. Department of Health and Human Services to be the cut-off for whether a family of that size lives in poverty. The income-to-needs ratios in this research were calculated for parents' self-reported annual family income in 1998.[c] See Figure 1 for details of how families were grouped by income-to-needs for the analyses.

Figure 1: Family Income Group Equivalents as a Percent of the Federal Poverty Level, 2003[d]

Family Income Groups as a Function of the Federal Poverty Line (FPL)	*Equivalent 2003 Annual Income for a Family of Four*
0 to 100% of FPL	$0 – $18,400
100% to 200% of FPL	$18,400 – $36,800
200% to 300% of FPL	$36,800 – $55,200
300% or more of FPL	$55,200 or more

[a] For more information, see <nces.ed.gov/ecls>.

[b] Dalaker, J. (1999). Poverty in the United States, 1998 (Current Population Reports No. P60-207). Washington, DC: U.S. Census Bureau <www.census.gov/prod/99pubs/p60-207.pdf>.

[c] See U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning & Evaluation. (1999). The 1998 HHS Poverty Guidelines. *Federal Register*, 63(36), pp. 9235-9238 <aspe.hhs.gov/poverty/98poverty.htm>.

[d] U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning & Evaluation. (2003). Annual update of the HHS Poverty Guidelines. *Federal Register*, 68(26), pp. 6456-6458 <aspe.hhs.gov/poverty/03fedreg.htm>.

Defining Healthy Child Development

For this research, NCCP used three indicators of academic development, four indicators of social and emotional development, and one indicator of physical development for children at the end of the kindergarten year (see Box 2 for detailed explanation of indicators).

The academic indicators are the focus of early childhood education, namely reading skills, math skills, and children's understanding of the world around them—known as general knowledge.

While the current government policy emphasis on "cognitive" skills to achieve academic success is important, it is equally important that throughout early childhood children develop skills to regulate both their own emotions and behaviors and their abilities to interact with others.[4] Whether children are able to control their impulses and to get along with other children in early childhood forecast the success with which they manage the challenges of their later lives.[5] Problems relating to others—such as aggression or defiance—or tendencies for children to feel anxious or withdrawn can persist into adolescence, leading to delinquency or risky behaviors.[6]

Box 2: Indicators of Healthy Child Development

Cognitive Development[a] (based on standardized test scores)

- Reading: letter recognition, beginning sounds, ending sounds, sight words, vocabulary, comprehension of words in context
- Math: abilities with numbers and shapes, relative size, ordinality, addition/subtraction, multiplication/division
- General Knowledge: knowledge and understanding of the social, physical, and natural world and ability to draw inferences and comprehend implications

Social-Emotional Development[b] (based on parent and teacher ratings)

- Social Competence: facility at helping others, sharing materials, and complying with rules and directions
- Self-Regulation: ability to control emotions or behavior, particularly in conflict situations.
- Externalizing Problem Behaviors: verbal or physical aggression, poor control of temper, and arguing (teacher ratings only)
- Internalizing Problem Behaviors: behaviors that indicate anxiety, sadness, loneliness, or low self-esteem.

Physical Development (based on observation)

- Overweight: calculated from children's body mass index based on recommendations by the U.S. Centers for Disease Control and Prevention.[c]

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[a] The items used in the ECLS-K direct child cognitive assessment were developed by the ECLS-K assessment work group or were adapted from several existing instruments (see <http://nces.ed.gov/ecls/> for more information on these instruments). For these analyses, we used the child's standardized (T) score on each subscale. Three subject areas were created from these items: Reading (IRT-based theta = .90), Mathematics (.90), and General Knowledge (.88). Each test is standardized to have a mean of 50 and a standard deviation of 10.

[b] The main instrument for measuring children's social-emotional development in the ECLS-K is an adaptation of Gresham and Elliott's Social Skills Rating System (SSRS). See Gresham, F. M. & Elliott, S. N. (1990). *The Social Skills Rating System*. Circle Pines, MN: American Guidance Services.

[c] Body mass index is calculated by dividing the child's weight in pounds by the square of the child's height in inches and multiplying by 703. A child is determined to be overweight if his or her body mass index is at or above the 95th percentile established by the U.S. Centers for Disease Control and Prevention specific to the age and gender of the child. See Rosner, B.; Prineas, R.; Loggie, J.; & Daniels, S. R. (1998). Percentiles for body mass index in U.S. children 5 to 17 years of age. *Journal of Pediatrics*, 132(2), pp. 211-222.

The association between family income and overweight children was chosen as the physical indicator because obesity places children at major risk for significant health problems throughout life, including poor cardiovascular health (such as hypertension and increased cholesterol), endocrine abnormalities (particularly type 2 diabetes), and impaired mental health (including depression and low self-esteem).[7] The increase in obesity among both children and adults in the United States has been recognized as an epidemic by the U.S. Surgeon General.[8] In a recent survey of 4,722 children throughout the United States, over 10 percent of children aged 2 to 5 and 15 percent of children aged 6 to 11 were found to be overweight or obese.[9]

Experiences of Unhealthy Development

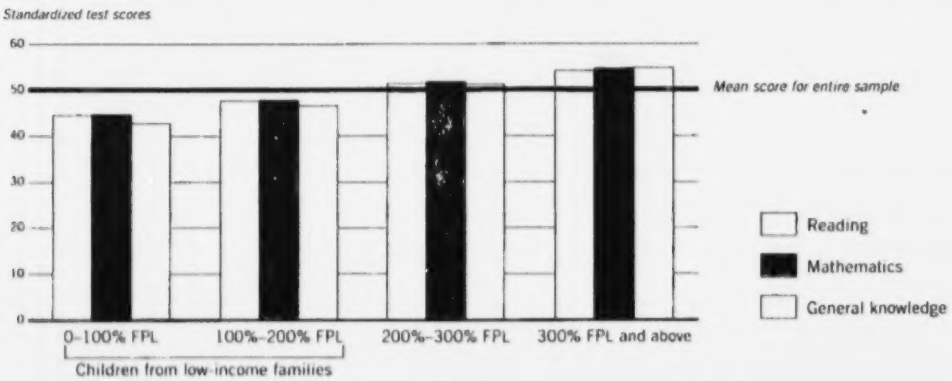
Previous research, including an earlier report in this series, shows that an income under 200 percent of the federal poverty level is insufficient to supply a family's basic needs such as food, housing, health care, child care, transportation, and other necessities as well as taxes.[10] The indicators of well-being in early childhood examined in this report confirm we have much to be concerned about for children living in low-income families.

Family Income and Cognitive Development [11]

The pattern of academic test scores is striking and consistent: children in families whose incomes fall below 200 percent FPL are well below average on their reading, math, and general knowledge test scores compared to the well-above-average scores of children living in families with incomes over 300 percent of FPL ($55,200 for a family of four). Only 16 percent of the children in officially poor families but 50 percent of the children from the most affluent families scored in the same upper range. (See Figure 2.)

Despite these stark differences in average test performance, it is important to recognize that there is considerable variation in academic achievement within each of the groups. The fact that some of the children in low-income families scored considerably above the mean tells us that there are children who are able to surmount the challenges they face. Determining what enables these children to succeed academically should be an important priority for public policy research.

Figure 2: Average Reading, Math, and General Knowledge Standardized Test Scores Within Income-to-Needs Groups, 1998



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Family Income and Social-Emotional Development

A strong pattern emerges for children's levels of social competence and self-regulation (as rated by their parents and teachers): as families' incomes increase, so do levels of both children's social competence and their self-regulation. (See Figure 3.) In addition, as families' incomes increase, the levels of children's externalizing and internalizing problem behaviors decrease at regular intervals. (See Figure 4.)

Figure 3: Average Levels of Social Competence and Self-Regulation Within Income-to-Needs Groups, 1998

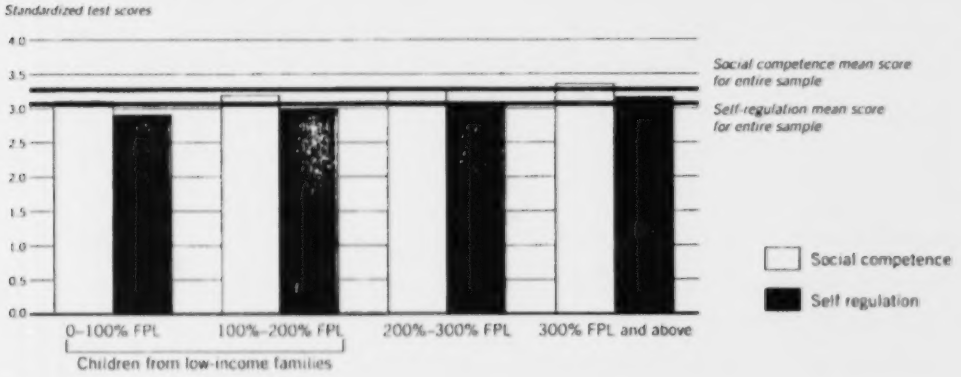
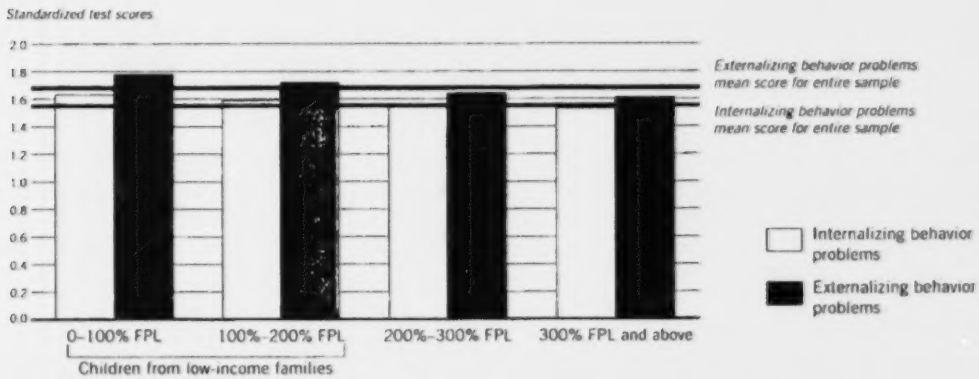


Figure 4: Average Levels of Externalizing and Internalizing Behavior Problems Within Income-to-Needs Groups, 1998



Family Income and Physical Development

Children living in low-income families are more likely than other children to be overweight. (See Figure 5.) While 10 percent of the 21,255 children in the study are considered overweight (identical to the prevalence rate reported by the U.S. Centers for Disease Control and Prevention[12]), 12 percent of the 9,561 low-income children in the sample are overweight.

The finding that one in ten of all kindergartners, regardless of family income, are already seriously overweight is sobering and demands stepped up efforts at public health education and intervention.

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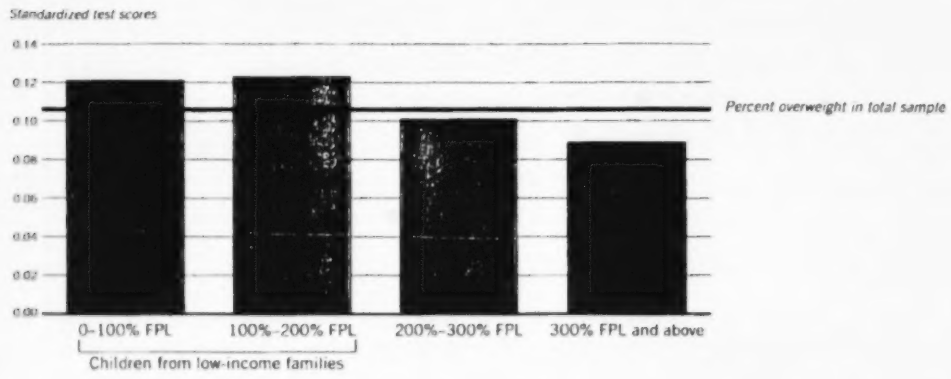
Figure 5: Average Percentage of Children Who Are Overweight Within Income-to-Needs Groups, 1998



Policy Implications

These findings from this large-scale national sample confirm and extend findings from research on more limited samples.[13] In general, with some welcome exceptions, there is a dramatic linear pattern between family income and children's developmental outcomes related to health, social and emotional functioning, and cognitive skills. The more income a family has, the better children do.

In the present policy context, these findings provide clear support for a broad perspective on factors that promote school readiness and early school success. They are particularly relevant to a current policy debate about the emphasis primarily on interventions that develop academic skills versus those that include attention to both health issues (with necessary attention to obesity) and social and emotional competence.[14]

By the time they begin formal schooling, children in low-income families already lag significantly behind their more affluent peers across the three domains of development examined in this research brief. This may be because the child care centers, preschools, and family child care situations that low-income parents can afford are of poor quality. Although child care funding has increased in the years since welfare reform, efforts are still needed to improve the quality and number of options available to low-income families and to continue and extend child care subsidies. One avenue to achieve this would be to increase the number of and access to high-quality, well-regulated preschools. Head Start has long made attention to comprehensive services a hallmark of its program.[15]

Schools with high proportions of low-income children have higher numbers of inexperienced teachers, fewer computers, less Internet access, and larger class sizes than schools with lower proportions of low-income children.[16] Thus, the children who stand to gain the most from quality schools often do not have access to them. Federal, state, and local policies that promote more equitable distribution of funding and resources across school districts could resolve such discrepancies.

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Finally, it is critical that families have sufficient income to support their children. Several policy approaches could help low-income parents meet the material needs of their children, including a raise in the minimum wage, expansion of the federal Earned Income Tax Credit, a decreased payroll tax burden on low-wage workers, and health insurance for working parents (see Research Brief No. 1 in this series: *Employment Alone is Not Enough for America's Low-Income Children and Families*).[17]

When low family incomes compromise child development, we all pay the price in higher costs for special education and mental and physical health services, lower levels of educational achievement, and a less prepared work force. The findings from this research brief challenge us to continue efforts to close the "income gap" in early child development.

Endnotes

1. The federal poverty level is currently $18,400 for a family of four. This number is from the federal poverty guidelines issued by the U.S. Department of Health and Human Services. See <aspe.hhs.gov/poverty/03poverty.htm>.

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5. See Shonkoff & Phillips in endnote 4.

6. Ibid.

7. American Academy of Pediatrics. (2003). Prevention of pediatric overweight and obesity. *Pediatrics,* 112(2), pp. 424-430.

8. U.S. Department of Health and Human Services. (2001). *The Surgeon General's call to action to prevent and decrease overweight and obesity.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General.

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11. All of the outcome level differences among income-to-needs groups discussed in this research brief were statistically significant.

12. See endnote 9.

13. See Dearing, E.; McCartney, K.; & Taylor, B. A. (2001). Change in family income-to-needs matters more for children with less. *Child Development*, 72(6), pp. 1779-1793; and reviews by: Aber, J. L.; Bennett, N. G.; Conley, D. C.; & Li, J. (1997). The effects of poverty on child health and development. *Annual Review of Public Health*, 18, pp. 463-483; Brooks-Gunn, J., & Duncan, G. J. (1997). The effects of poverty on children and youth. *The Future of Children*, 7(2), pp. 55-71; Sherman, A. (1997). *Poverty matters: The cost of child poverty in America*. Washington, DC: Children's Defense Fund; Huston, A. C. (Ed.). (1991). *Children in poverty*. New York, NY: Cambridge University Press; McLoyd, V. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, 53(2), pp. 185-204; Seccombe, K. (2000). Families in poverty in the 1990s: Trends, causes, consequences, and lessons learned. *Journal of Marriage and the Family*, 62(4), pp. 1094-1113.

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